

## 2013 Winter Workshop for Teachers

### Basic ROV (underwater robot) Design and Building for Classroom Projects

January 11-12, 2013

NOAA's Thunder Bay National Marine Sanctuary Visitor Center  
500 W. Fletcher St., Alpena, Michigan

### ROV Education and Resources for the Classroom

This workshop provides teachers with the skills and experiences they need to incorporate marine science, technology, engineering, and math (STEM) topics into their classrooms. In addition to lecture and hands-on time, the workshop includes tours of NOAA's Thunder Bay National Marine Sanctuary visitor center.

The 2013 Basic Level ROV Workshop will provide a forum for educators, especially those interested in participating in future underwater robotics (ROV) competitions organized by the MATE Center and the Marine Technology Society (MTS) ROV Committee and hosted regionally in northeast Michigan by Thunder Bay National Marine Sanctuary, to: 1) Acquire the knowledge and skills needed to implement ROV design and building curriculum in their classrooms, 2) Gain exposure to and develop and understanding of the type of work that ROV technicians do and the technologies they use, 3) Learn about the many career opportunities available in the marine technology field.

During the Workshop the participants will:

- Build a small-scale, fully functional ROV that can be replicated with students.
- Use the vehicle to complete a set of pre-determined missions.
- Acquire the knowledge, skills, and resources to effectively mentor students in designing and building an ROV to participate in future MATE competitions.
- Make connections with educators with similar interests and share "best practices" in teaching and instruction.

Workshop participants should be:

- A current elementary or middle school teacher (\*high school teachers with no previous experience will be considered - please contact us to discuss options)
- Willing to return to your school and implement the ROV project with your students through an ROV course or club or by integrating ROV technology into your current courses.
- Willing to share with Thunder Bay National Marine Sanctuary's ROV Mentor Network what you have accomplished as a result of the workshop.

This is a **FREE** workshop. Participants will be provided with meals and take home materials, including an ROV building project workbook. Participants may be eligible to take home the ROVs they build during the workshop (pending funding). For teacher professional development .6 SBCEU's available (pending). Workshop will be Friday and Saturday. Free housing available at the Thunder Bay Marine Sanctuary research quarters.

### Sign Up Today!

Sarah Waters at 989.356.8805 ext. 29

sarah.a.waters@noaa.gov



### Agenda

- Participants will learn how ROVs are used for scientific activities, including ROVs in the Great Lakes.
- Participants will learn how students can use ROVs to explore their local watershed
- Participants will design and build an ROV using a kit that can be replicated in the classroom or in an after school setting
- Participants will "fly" their ROVs in an underwater challenge course, they will also make design modifications based on the water challenges
- Participants will discuss the challenges of engineering for an underwater environment, such as buoyancy, weight, and propulsion
- Participants will be provided with information on how to use ROVs to support learning across the curriculum

